



Weston Solutions, Inc.
Suite 700
5599 San Felipe
Houston, Texas 77056-2721
713-985-6600 • Fax 713-985-6703

13 June 2006

Mr. Gabriel Mussio
Environmental Manager
Building Services Dept, City of Houston
City Hall Annex, 2nd Floor
900 Bagby, Houston, TX 77002

RE: Limited Soil Evaluation
Former Fire Station No.11
4520 Washington Ave, Houston, Texas

Dear Mr. Mussio:

Weston Solutions, Inc. (WESTON®) has completed field investigation activities at the referenced site per your authorization dated 11 May 2006. Field investigation activities were performed on 22 May 2006. This letter reports presents the findings from the investigation performed.

Background

Healthy Resources Enterprises (HRE) performed a Phase I Environmental Site Assessment (ESA) of the property located at 4520 Washington Ave in Houston, Texas. The property was formerly used as a City of Houston (City) fire station (Fire Station # 11). The Phase I ESA identified several areas of concern and HRE performed a limited Phase II investigation of the property in December 2005. The Phase II included soil and groundwater sampling, sampling of debris piles at the property and an asbestos and lead-based-paint survey. The Phase II data indicated the presence of lead and barium in several soil and groundwater samples at concentrations that exceeded the Texas Risk Reduction Program (TRRP) Tier 1 Protective Concentration Levels (PCLs). Based on this data, HRE's Phase II report concluded that the property was impacted. The Phase II report did not include development of site-specific Tier 2 PCLs for metals. The City asked WESTON to collect additional soil samples and establish site-specific Tier 2 PCLs for lead and barium. In the event existing lead and barium concentrations in soils at the property are below the Tier 2 PCLs, remediation of soils would not be necessary. Additionally, the City requested WESTON to evaluate the results of groundwater sampling performed by HRE.

Scope of Work

The scope of work for the proposed investigation was as follows:



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- Collect five (5) surface soil samples from areas sampled during the previous Phase II investigation. Analyze the samples for lead, barium and soil pH.
- Calculate a site-specific TRRP Tier 2 PCL for lead and barium in soils.
- Perform synthetic precipitation leaching procedure (SPLP) testing for lead on two soil samples with the highest lead concentrations.
- Review groundwater data from the Phase II investigation and provide comments on the validity of the data.
- Perform all analyses in accordance with Texas Risk Reduction Program (TRRP) requirements. Perform analyses using on a standard turnaround times.
- Perform sample collection in accordance with TRRP requirements.

Field Activities

WESTON mobilized to the site on 22 May 2006. Disposable scoops were used to collect samples and transferred to laboratory prepared sample containers. The sample containers were placed in a cooler packed with ice and transported to the laboratory.

A total of five (5) surface soil samples were collected from various areas of the property and submitted for lead, barium and pH analysis. In addition, the soil sample located adjacent to SS01 was analyzed for mercury. The two samples with the highest reported concentrations were also analyzed using SPLP for lead and barium.

Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) measures included analyses of a duplicate sample and an MS/MSD sample.

Analytical Results

A summary of the analytical results is presented in Table 1. The complete analytical laboratory report is included as Attachment 1.

Reported concentrations of lead and barium were below the TRRP Tier 1 PCLs for all soil samples. The lead results at SS02 appear to indicate that lead concentration exceeds the Tier 1 PCL for groundwater protection; however, SPLP data indicates that the reported concentration is protective of groundwater. Furthermore, evaluation of the total lead concentrations with respect to reported leachate concentrations from the same sample allowed for development of site-specific soil-water partition coefficient (K_d) values. By conservatively utilizing the minimum K_d value in TRRP^{GW} Soil_{ing} PCL calculations, a Tier 2 PCL was calculated to be 1,120 mg/kg.



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Analysis

The HRE Phase II report concerning the property indicated that removal of soil with lead concentrations were above the TRRP Texas-specific background level was required in order to protect groundwater, and that groundwater at the site was impacted. The TRRP rules require a response action for media contaminated above PCLs. However, the results of WESTON's SPLP analysis indicate that the Texas-specific background value is not the applicable Tier 1 critical PCL. Lead concentrations in soil have not been identified at levels that are capable of leaching to groundwater, based on site-specific K_d values calculated from on-site analytical data. Conservatively, the minimum site-specific K_d value was incorporated into the TRRP equations for calculating the $^{GW}Soil_{ing}$ PCL pathway, which resulted in a Tier 2 $^{GW}Soil_{ing}$ PCL of 1,120 mg/kg. Therefore, identified concentrations of lead in soil are considered protective of groundwater, and the appropriate Tier 1 critical PCL for a residential receptor is the total-soil-combined value of 500 parts per million.

Reported concentrations of lead in groundwater are likely attributable to soil or sediment present in the water samples. The samples were collected from temporary monitor wells; laboratory analysis of water samples from temporary wells often report concentrations of metals in water that reflect the presence of metals in sediment suspended in the water sample. The observed soil concentrations are typical of the Houston urban environment, and are not at levels consistent with creating a release to groundwater.

Conclusions

Based on the limited soil evaluation performed, soil and groundwater at the property at 4520 Washington Avenue do not appear to be impacted, and lead and barium were reported at concentrations below the TRRP Tier 1 PCLs. No response action is needed.

We appreciate the opportunity to work on this project. If you have any questions, please call me at (713) 985-6732.

Very truly yours,

WESTON SOLUTIONS, INC.

A handwritten signature in black ink, appearing to read "Ashby McMullan".

Ashby McMullan, P.E.
Project Manager

Table 1
Summary of Soil Analytical Results
Former Fire Station No. 11
4520 Washington Avenue
Houston, Harris County, Texas

Analyte	Tier 1 Residential 0.5 acres Tot Soil _{Comb} ¹	Tier 1 Residential 0.5 acres GW Soil _{Ing}	Tier 2 Residential 0.5 acres GW Soil _{Ing} ³	SS01 80567-01 05/22/2006 Normal	SS02 80567-02 05/22/2006 Normal	SS03 80567-03 05/22/2006 Normal	SS04 80567-04 05/22/2006 Normal	SS05 80567-05 05/22/2006 Normal
GeneralChem								
pH (SW-846 9045)	--	--	--	6.97	6.79	7.06	7.01	7.05
Total Metals (mg/Kg)								
Barium (SW-846 6010B)	7960	444	2640	88.9	246	163	68.2	58.3
Lead (SW-846 6010B)	500	3.03	1120	23.7	307	75.4	56.6	62.1
SPLP Metals (mg/L) SPLP Reg ²								
Barium (SW-846 6010B)	0.50	--	--	--	0.10 U	0.10 U	--	--
Lead (SW-846 6010B)	0.50	--	--	--	0.015 U	0.015 U	--	--

¹ Texas TRRP Issued March 2006

² Synthetic Precipitation Leaching Procedure Regulatory Limit

³ Tier 2 PCLs are based on SPLP data

LABORATORY ANALYSIS REPORT



A & B Environmental Services, Inc.
10100 East Freeway, Suite 100
Houston, TX 77029

Report Date: 5/31/2006
Total No. Pages: 10

Client Project ID

01723.021.003.028 Former Fire Station No.11

Weaton Solutions
Attn: Shekhar Iyer
5599 San Felipe Suite 700
Houston, TX 77056

Client PO #:
Date Received: 5/22/2006 13:18
Collected by: Chantelle Billet

A & B Labs has analyzed the following samples . . .

Your Sample ID

SS01

SS02

SS03

SS04

SS05

Job ID

80567-01

80567-02

80567-03

80567-04

80567-05

Thank you for choosing A & B Labs.

Approved By:


Title:


Mindy Kolander
Project Manager


Date:


5-31-06


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LABORATORY TEST RESULTS									
 A&B Job ID: 80567		Date: 5/31/2006							
CUSTOMER: Weston Solutions					PROJECT: 01723.021.003.026 Former Fire Station No ATTN: Shekhar Iyer				
Customer Sample ID: SS01					Job Sample ID: 80567-01				
Date Collected: 5/22/2006					Sample Matrix: Soil				
Time Collected: 11:30									
Sample Loc/Other Info:									
Test Method	Parameter/Test Description	Result	Units	D.F.	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 9045	Corrosivity								
	pH	6.97	pH units	1				05/22 16:30	DS
SW-846 8010B	Total Metals								
	Barium	88.9	mg/Kg	1	0.5			05/23 18:27	SEC
	Lead	23.7	mg/Kg	1	0.5			05/23 18:27	SEC
SW-846 7470A	Total Mercury								
	Mercury	BRL	mg/Kg	1	0.04			05/23 15:30	SEC
SW-846 7470A	SPLP Mercury								
	Mercury	BRL	mg/L	1	0.2	0.2		05/23 16:11	SEC

LABORATORY TEST RESULTS									
 A&B Job ID 80567		Date: 5/31/2006							
CUSTOMER: Weston Solutions				PROJECT: 01723.021.003.028 Former Fire Station No ATTN: Shakhariyer					
Customer Sample ID: SS02					Job Sample ID: 80567-02				
Date Collected: 5/22/2006					Sample Matrix: Soil				
Time Collected: 11:35									
Sample Loc./Other Info:									
Test Method	Parameter/Test Description	Result	Units	D.F.	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 9045	Corrosivity								
	pH	6.79	pH units	1				05/22 18:30	DS
SW-846 6010B	Total Metals								
	Barium	246	mg/Kg	1	0.5			05/23 18:27	SEC
	Lead	307	mg/Kg	1	0.5			05/23 18:27	SEC
SW-846 6010B	SPLP Metals								
	Barium	BRL	mg/L	1	0.1			05/30 18:44	SEC
	Lead	BRL	mg/L	1	0.015			05/30 18:44	SEC

LABORATORY TEST RESULTS									
 A&B Job ID 80567		Date: 5/31/2008							
CUSTOMER: Weston Solutions		PROJECT: 01723.021.003.028 Former Fire Station No. ATTN: Shekhar Iyer							
Customer Sample ID: SS03		Job Sample ID: 80567-03							
Date Collected: 5/22/2006		Sample Metric: Soil							
Time Collected: 11:40									
Sample Loc./Other Info:									
Test Method	Parameter/Test Description	Result	Units	D.F.	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8045	Corrosivity								
	pH	7.08	pH units	1				05/22 16:30	DS
SW-846 80108	Total Metals								
	Barium	183	mg/Kg	1	0.5			05/23 18:27	SEC
	Lead	75.4	mg/Kg	1	0.5			05/23 18:27	SEC
SW-846 80108	SPLP Metals								
	Barium	BRL	mg/L	1	0.1			05/30 18:44	SEC
	Lead	BRL	mg/L	1	0.015			05/30 18:44	SEC

LABORATORY TEST RESULTS										
		A&B Job ID: 80567			Date: 5/31/2006					
CUSTOMER: Weston Solutions				PROJECT: 01723.021.003.028 Former Fire Station No ATTN: Shekhar Iyer						
Customer Sample ID: S604				Job Sample ID: 80567-04						
Date Collected: 5/22/2006				Sample Matrix: Soil						
Time Collected: 11:45										
Sample Loc./Other Info:										
Test Method	Parameter/Test Description	Result	Units	D.F.	Rpt Limit	Reg Limit	Q	Date	Time	Analyst
SW-846 9045	Corrosivity									
	pH	7.01	pH units	1				05/22	16:30	DS
SW-846 80108	Total Metals									
	Barium	68.2	mg/Kg	1	0.5			05/23	18:27	SEC
	Lead	58.6	mg/Kg	1	0.6			05/23	18:27	SEC

LABORATORY TEST RESULTS										
		A&B Job ID: 80567				Date: 5/31/2006				
CUSTOMER: Weston Solutions			PROJECT: 01723.021.003.026 Former Fire Station No ATTN: Shekhar Iyer							
Customer Sample ID: SS05					Job Sample ID: 80567-05					
Date Collected: 5/22/2006					Sample Matrix: Soil					
Time Collected: 11:50										
Sample Loc./Other Info:										
Test Method	Parameter/Test Description	Result	Units	D.F.	Rpt Limit	Reg Limit	Q	Date	Time	Analyst
SW-846 8046	Corrosivity									
	pH	7.05	pH units	1				05/22	16:30	DS
SW-846 8010B	Total Metals									
	Barium	58.3	mg/Kg	1	0.5			05/23	18:27	SEC
	Lead	62.1	mg/Kg	1	0.5			05/23	18:27	SEC



A & B Environmental Services, Inc.
10100 East Freeway
Houston, Texas 77029

QUALITY CONTROL CERTIFICATE

Report Date: 5/31/2006

Job ID: 80567

QCType: Duplicate						QCBatchID	QC		Qual
Parameter	Method	QC Sapl Result	Dup Result	RPD	CLimits		SampleID		
pH	SW-846 8045	8.97	8.97	0	<20	Q052206pHa	80567-01		
Barium	SW-846 6010B	104	113	8.3	<25	Q052306msl	80552-01		
Lead	SW-846 6010B	2.39	2.47	3.3	<25	Q052306msl	80552-01		
Mercury	SW-846 7470A	BRL	BRL	0	<27	Q052306hgsi	80501-01		

QCType: LCS and LCSD												
Parameter	Method		Spike Added	LCS Result	LCSD Result	LCS Rec %	LCSD Rec %	RPD	%RPD CLimits	%Rec CLimits	QCBatchID	Qual
pH	SW-846 8045		4	3.99		99.8			<20	80-120	Q052206pHa	
Barium	SW-846 6010B		25	23.9	24.2	95.8	97	1.2	<25	80-120	Q052306msl	
Lead	SW-846 6010B		25	24.2	24.4	96.8	98	0.8	<25	80-120	Q052306msl	
Barium	SW-846 6010B		1	1.00	1.01	100	101	1.0	<25	80-120	Q053006septpba	
Lead	SW-846 6010B		1	1.00	1.01	100	101	1.0	<25	80-120	Q053006septpbb	
Mercury	SW-846 7470A		0.1	0.102		102			<27	80-120	Q052306hgsi	
Mercury	SW-846 7470A		0.005	0.005		100			<25	80-120	Q052306hgsppip	

QCType: MS and MSD														
Parameter	Method	QC Sapl Result	Spike Added	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD	RPD CLimits	%Rec CLimits	QCBatchID	QC SampleID	Qual	
Barium	SW-846 6010B	104	25	128		100			<25	23-156	Q052306msl	80552-01		
Lead	SW-846 6010B	2.39	25	20.7		73			<25	41-128	Q052306msl	80552-01		
Barium	SW-846 6010B	BRL	2	1.88	1.89	94	95	0.5	<25	70-125	Q053006splpba	80567-02		
Lead	SW-846 6010B	BRL	2	1.86	1.88	93	93	0.0	<25	70-130	Q053006splpbb	80567-02		
Mercury	SW-846 7470A	BRL	0.1	0.100		100			<27	49-147	Q052306hgsi	80501-01		
Mercury	SW-846 7470A	BRL	0.005	0.005	0.0053	100	106	5.8	<25	58-134	Q052306hgspp	80567-01		

** BRL-Below Reporting Limit

10100 East Fwy. (I-10), Ste. 100 Houston, TX 77029 713-453-6060 713-453-6091 Fax ablabs.com		1. REPORT TO: Company: <u>Weston Solutions</u> Address: <u>5599 San Felipe</u> <u>Suite 700, Houston, TX 77056</u> Contact: <u>Chantelle Billiot</u> Phone: <u>713-985-6780</u> Fax: <input type="checkbox"/> _____ E-mail: <input checked="" type="checkbox"/> <u>Chantelle.billiot@westonsolutions.com</u>				2. INVOICE TO: Company: <u>Weston Solutions</u> Address: <u>5599 San Felipe, # 700</u> <u>Houston, TX 77056</u> Contact: <u>Andrew Molly</u> Phone: <u>713-985-6600</u> Fax: <input type="checkbox"/> _____ E-mail: <input type="checkbox"/> _____				3. PO# 4. Turnaround Time (Business Days) <input type="checkbox"/> Same Day* <input type="checkbox"/> Need by <input type="checkbox"/> 1 Day* <input type="checkbox"/> 2 Days* <input type="checkbox"/> 3 Days* <input checked="" type="checkbox"/> 7 Days * Surcharge applies			
		5. Project # <u>01723.021.003.028</u>				6. Project Name / Location <u>Former Fire Station No. 11/4520 Washington Ave, Houston</u>				7. Special Instructions (PLEASE PRINT) <input checked="" type="checkbox"/> TRRP Limits only <input type="checkbox"/> TRRP Rpt. Package <input type="checkbox"/> See Attached			
8. Sampler's Name & Company (PLEASE PRINT) <u>Chantelle Billiot</u> <u>Weston Solutions</u>		Sampler's Signature & Date <u>Chantelle Billiot 5-22-06</u>		13. Containers* 14. Containers* P/O P/O P/O P/O P/O P/O P/O 15. Preservatives** N N N N N N N		16. Analysis/Methods <u>Lead</u> <u>Barium</u> <u>pH</u> <u>Mercury</u> <u>SPLP Mercury</u> <u>SPLP Lead *</u> <u>SPLP Barium *</u>		17. REMARKS					
9. Sample ID and Description		10. Sampling		11. Date		12. Time		Matrix					
LAB USE ONLY Item		Date Time		Comp. Grab Water Soil Sludge Oil Air Other									
01 1 SS01		5-22-06 1130		X X				1 X X X X X					
02 2 SS02		5-22-06 1135		X X				1 X X X X X					
03 3 SS03		5-22-06 1140		X X				1 X X X X X					
04 4 SS04		5-22-06 1145		X X				1 X X X X X					
05 5 SS05		5-22-06 1150		X X				1 X X X X X					
6													
7													
8													
9													
10													
18. RELINQUISHED BY		DATE		TIME		19. RECEIVED BY		DATE					
1 Chantelle Billiot		5-22-06		1:18		S. Anna		5/22/06 1:18					
2													
3													
*Containers: VOA - 40 ml vial A/G - Amber Glass 1 Liter 4 oz/8 oz - glass w/td mouth P/O - Plastic/Other		**Preservatives: C - Cool H - HCl N - HNO ₃ S - H ₂ SO ₄ OH - NaOH T - Na ₂ S ₂ O ₃ X - Other		BILL OF LADING / TRACKING #		20. KNOWN HAZARDS / COMMENTS *Please analyze the two samples with the highest lead concentration for SPLP Lead & SPLP Barium.		A&B cannot accept verbal changes Please FAX written changes to 713-453-6091 Samples will be disposed of after 30 days A & B reserves the right to return samples					
METHOD OF SHIPMENT <u>Drop off to lab</u>		LAB USE ONLY SAMPLING RENTAL PU											



Sample Condition Checklist

Date : 5/22/2006

Lab ID#: 80567		Date Received : 05/22/2006		Time Received : 01:18 PM									
Company Name: Weston Solutions													
Temperature: 18°C		Sample pH: N/A											
Check Points													
				Yes	No								
1.	Cooler Seal present and signed.				x								
2.	Sample(s) in a cooler.			x									
3.	If yes, ice in cooler			x									
4.	Sample(s) received with chain-of-custody			x									
5.	C-O-C signed and dated.			x									
6.	Sample(s) received with signed sample custody seal.				x								
7.	Sample containers arrived intact (If No comment)			x									
8.	Matrix	Water	Soil	Liquid	Sludge	Solid	Cassette	Tube	Bulk	Badge	Food	Other	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.	Samples were received in appropriate container(s)											x	
10.	All samples were tagged or labeled.											x	
11.	Sample ID labels match C-O-C ID's.											x	
12.	Bottle count on C-O-C matches bottles found.											x	
13.	Sample volume is sufficient for analyses requested.											x	
14.	Samples were received within the hold time.											x	
15.	VOA vials completely filled.											N/A	
16.	Sample accepted.											x	
Comments: Include actions taken to resolve discrepancies/problem:													
Sample cooling was initiated in the field.													
Received by : Storres													
Check in by/date : Storres / 5/22/2006													